



US005185226A

United States Patent [19]

Grosso et al.

[11] **Patent Number:** **5,185,226**[45] **Date of Patent:** * **Feb. 9, 1993**

[54] **ELECTROSTATIC METHOD FOR MULTICOLOR IMAGING FROM A SINGLE TONER BATH COMPRISING DOUBLE-ENCAPSULATED TONER PARTICLES**

[75] **Inventors:** Paul V. Grosso, West Hartford; Feagin A. Wing, Jr., Farmington; Michael J. Morgan, Northford; Renate C. Stegmeier, Bethany, all of Conn.; Roger W. Day, Louisville, Ky.; Willard F. Burt, Bristol, Conn.

[73] **Assignee:** Olin Corporation, Cheshire, Conn.

[*] **Notice:** The portion of the term of this patent subsequent to Sep. 26, 2006 has been disclaimed.

[21] **Appl. No.:** 723,351

[22] **Filed:** Jun. 28, 1991

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 453,551, Dec. 20, 1989, Pat. No. 5,064,736, which is a continuation-in-part of Ser. No. 274,542, Nov. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 171,614, Mar. 23, 1988, Pat. No. 4,869,981.

[51] **Int. Cl.⁵** G03G 13/01

[52] **U.S. Cl.** 430/47; 430/42; 430/45; 430/138

[58] **Field of Search** 430/42, 45, 47, 111, 430/138, 137, 114, 106

[56] **References Cited****U.S. PATENT DOCUMENTS**

3,429,827	2/1969	Ruus	430/138
3,833,293	9/1974	Serio et al.	355/17
3,854,942	12/1974	Akman	96/1.2
4,314,013	2/1982	Chang	430/901
4,501,809	2/1985	Hiraishi et al.	430/138
4,554,231	11/1985	Adair et al.	430/138
4,647,182	5/1987	Pierce	355/4
4,801,949	1/1989	Misono et al.	346/76 L
4,865,943	9/1989	Wright	430/138
4,869,981	9/1989	Wing, Jr. et al.	430/42
5,064,736	11/1991	Grosso et al.	430/42

FOREIGN PATENT DOCUMENTS

2133899B 2/1986 United Kingdom .

OTHER PUBLICATIONS

Chemical Week, "Mead Brings Color to Business", Dec. 13, 1987, pp. 32-33.

Chemical & Engineering News, "New Color Technology Uses Microcapsules", Jan. 11, 1988, p. 23.

Olin Hunt Publication entitled "Non-Impact Printing".

Primary Examiner—Marion E. McCamish

Assistant Examiner—Christopher D. RoDee

Attorney, Agent, or Firm—Dale Lynn Carlson

[57] **ABSTRACT**

An electrostatic method is disclosed for providing multicolor imaging from a single toner bath. The toner bath is a blend of individual toners, each of which contains a color precursor different from the others. Also disclosed is a method for the double encapsulation of toner particles to produce toner particles characterized by multiple encapsulation.

22 Claims, No Drawings